

CLAIMS

1. An article of manufacture for use in bleaching a person's teeth, comprising:
a shaped dental bleaching composition having a tray-like configuration comprising a front side wall, a rear side wall, and a trough between said front and rear side walls, the dental bleaching composition further comprising:

an adhesive layer comprising a substantially solid adhesive composition that has increased adhesiveness to teeth when moistened by saliva or water, said adhesive composition comprising at least one tooth adhesion agent that at least partially contributes to said increased adhesiveness to teeth; and

a dental bleaching gel, adjacent to an inner surface of said adhesive layer, comprising at least one dental bleaching agent, at least one tackifying agent, and a liquid or gel carrier.

2. An article of manufacture as defined in claim 1, said dental bleaching composition being initially horseshoe shaped prior to use so that said bleaching composition at least approximately conforms to a person's dental arch with minimal longitudinal shaping.

3. An article of manufacture as defined in claim 1, said dental bleaching composition initially having a longitudinal curvature that is less than the curvature of a person's dental arch prior to use so that additional longitudinal curving of said bleaching composition is required when said bleaching composition is placed over a person's teeth.

4. An article of manufacture as defined in claim 1, said dental composition initially having a substantially straight longitudinal profile prior to use so that longitudinal curving of said bleaching composition is required when said bleaching composition is placed over a person's teeth.

5. An article of manufacture as defined in claim 1, at least a portion of said trough having an approximate U-shaped cross section.

6. An article of manufacture as defined in claim 1, at least a portion of said trough having an approximate V-shaped cross section.

7. An article of manufacture as defined in claim 1, at least a portion of said trough having an approximate L-shaped cross section.

8. An article of manufacture as defined in claim 1, at least a portion of said trough having approximately a rectangular or trapezoidal cross section.

9. An article of manufacture as defined in claim 1, said bleaching composition sized and configured so as to fit over at least a portion of a person's upper dental arch.

10. An article of manufacture as defined in claim 1, said bleaching composition sized and configured so as to fit over at least a portion of a person's lower dental arch.

11. An article of manufacture as defined in claim 1, wherein said bleaching composition is sized and configured so as to approximately terminate at or near a person's gingival margin when said bleaching composition is in use.

12. An article of manufacture as defined in claim 1, said tooth adhesion agent comprising polyvinyl pyrrolidone.

13. An article of manufacture as defined in claim 1, said tooth adhesion agent comprising at least one of carboxypolymethylene, polyethylene oxide, polyacrylic acid, copolymer of polyacrylic acid, polyacrylate, polyacrylamide, copolymer of polyacrylic acid and polyacrylamide, PVP-vinyl acetate copolymer, carboxymethylcellulose, carboxypropylcellulose, polysaccharide gum, or protein.

14. An article of manufacture as defined in claim 1, said tooth adhesion agent having a concentration in a range of about 10% to about 90% by weight of said adhesive composition.

15. An article of manufacture as defined in claim 1, said tooth adhesion agent having a concentration in a range of about 20% to about 80% by weight of said adhesive composition.

16. An article of manufacture as defined in claim 1, said tooth adhesion agent having a concentration in a range of about 40% to about 75% by weight of said adhesive composition.

17. An article of manufacture as defined in claim 1, said adhesive composition further comprising at least one humectant.

18. An article of manufacture as defined in claim 1, wherein said adhesive layer has a cross-sectional thickness in a range of about 0.1 mm to about 0.5 mm.

19. An article of manufacture as defined in claim 1, wherein said adhesive layer has a cross-sectional thickness in a range of about 0.5 mm to about 2 mm.

20. An article of manufacture as defined in claim 1, wherein said adhesive layer has a cross-sectional thickness in a range of about 2 mm to about 3 mm.

21. An article of manufacture as defined in claim 1, said adhesive composition further comprising at least one member selected from the group comprising dental bleaching agents, dental desensitizing agents, remineralizing agent, antimicrobial agents, antiplaque agents, and anti-tartar agents.

22. An article of manufacture as defined in claim 1, said dental bleaching gel further comprising at least one member selected from the group comprising dental desensitizing agents, remineralizing agent, antimicrobial agents, antiplaque agents, and anti-tartar agents.

23. An article of manufacture as defined in claim 1, said dental bleaching agent having a concentration in a range of about 1% to about 60% by weight of said dental bleaching gel.

24. An article of manufacture as defined in claim 1, said dental bleaching agent having a concentration in a range of about 3% to about 40% by weight of said dental bleaching gel.

25. An article of manufacture as defined in claim 1, said dental bleaching agent having a concentration in a range of about 5% to about 30% by weight of said dental bleaching gel.

26. An article of manufacture as defined in claim 1, said tackifying agent comprising at least one of carboxypolymethylene, polyethylene oxide, polyacrylic acid, copolymer of polyacrylic acid, polyacrylate, polyacrylamide, copolymer of polyacrylic acid and polyacrylamide, PVP-vinyl acetate copolymer, carboxymethylcellulose, carboxypropylcellulose, polysaccharide gum, or protein.

27. An article of manufacture as defined in claim 1, further comprising a barrier layer comprising a moisture-resistant material adjacent to an outer surface of said adhesive layer that protects the dental bleaching composition from saliva or moisture when in use.

28. An article of manufacture as defined in claim 27, said barrier layer being flexible so that it will readily conform to the shape of a person's teeth when in use.

29. An article of manufacture as defined in claim 27, said barrier layer comprising at least one polyolefin.

30. An article of manufacture as defined in claim 29, said polyolefin comprising at least one of polyethylene, high density polyethylene, low density polyethylene, ultra-low density polyethylene, polypropylene, or polytetrafluoroethylene.

31. An article of manufacture as defined in claim 27, said barrier layer comprising at least one of wax, metal foil, paraffin, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer, polycaprolactone, polyester, polycarbonate, polyurethane, polyamide, or polyesteramide.

32. An article of manufacture as defined in claim 27, said barrier layer having a cross-sectional thickness in a range of about 0.025 mm to about 1.5 mm.

33. An article of manufacture as defined in claim 27, said barrier layer having a cross-sectional thickness in a range of about 0.05 mm to about 1 mm.

34. An article of manufacture as defined in claim 1, further comprising a sealed package within which said bleaching composition is sealed prior to use.

35. A kit for use in desensitizing a person's teeth comprising a plurality of said shaped dental bleaching compositions according to claim 1.

36. A kit as defined in claim 35, wherein at least some of said shaped dental bleaching compositions are stacked and internested together.

37. A kit as defined in claim 35, further comprising a barrier layer, or a material used to make a barrier layer, that is positioned adjacent to an outer surface of the adhesive layer when the dental bleaching composition is in use.

38. A method for bleaching a person's teeth comprising obtaining a dental bleaching composition according to claim 1 and placing said bleaching composition over at least a portion of the person's teeth for a desired time period.

39. An article of manufacture for use in bleaching a person's teeth, comprising:
a barrier layer comprising a moisture-resistant material in the shape of a dental tray comprising a front side wall, a rear side wall, and a trough between said front and rear side walls; and

a dental bleaching composition within said trough comprising:

an adhesive layer, adjacent to said barrier layer, comprising a substantially solid adhesive composition that has increased adhesiveness to teeth when moistened by saliva or water, said adhesive composition comprising at least one tooth adhesion agent that at least partially contributes to said increased adhesiveness to teeth; and

a dental bleaching gel, adjacent to an inner surface of said adhesive layer, comprising at least one dental bleaching agent, at least one tackifying agent, and a liquid or gel carrier.

40. An article of manufacture as defined in claim 39, at least a portion of said trough having a cross section that is approximately U-shaped, V-shaped, L-shaped, rectangular, or trapezoidal.

41. An article of manufacture as defined in claim 39, said barrier layer being flexible so that it will readily conform to the shape of a person's teeth when in use.

42. An article of manufacture as defined in claim 39, said barrier layer comprising at least one polyolefin.

43. An article of manufacture as defined in claim 42, said polyolefin comprising at least one of polyethylene, high density polyethylene, low density polyethylene, ultra-low density polyethylene, polypropylene, or polytetrafluoroethylene.

44. An article of manufacture as defined in claim 39, said barrier layer comprising at least one of wax, metal foil, paraffin, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer; polycaprolactone, polyester, polycarbonate, polyurethane, polyamide, or polyesteramide.

45. An article of manufacture as defined in claim 39, said barrier layer having sufficiently rigidity so as to at least partially contribute to maintaining itself in the shape of a dental tray prior to use.

46. An article of manufacture as defined in claim 45, said barrier layer comprising a customized dental tray.

47. An article of manufacture as defined in claim 39, said barrier layer comprising a thin, flexible membrane having no predefined shape, said adhesive layer having sufficiently rigidity so as to at least partially contribute to maintaining said barrier layer in the shape of a dental tray prior to use.

48. An article of manufacture as defined in claim 39, said trough being initially horseshoe shaped prior to use so that said dental desensitizing device at least approximately conforms to a person's dental arch with minimal longitudinal shaping.

49. An article of manufacture as defined in claim 39, said front side wall, rear side wall, and trough initially having a longitudinal curvature that is less than the curvature of a person's dental arch prior to use so that additional longitudinal curving is required when said dental bleaching composition is placed over a person's teeth.

50. An article of manufacture as defined in claim 39, said front side wall, rear side wall, and trough initially having a substantially straight longitudinal profile prior to use so that longitudinal curving of is required when said dental bleaching composition is placed over a person's teeth.

51. An article of manufacture as defined in claim 39, said tooth adhesion agent comprising polyvinyl pyrrolidone.

52. An article of manufacture as defined in claim 39, said adhesive composition further comprising at least one member selected from the group comprising dental bleaching agents, dental desensitizing agents, remineralizing agent, antimicrobial agents, antiplaque agents, and anti-tartar agents.

53. An article of manufacture as defined in claim 39, said dental bleaching gel further comprising at least one member selected from the group comprising dental desensitizing agents, remineralizing agent, antimicrobial agents, antiplaque agents, and anti-tartar agents.

54. A kit for use in desensitizing a person's teeth comprising a plurality of dental bleaching devices, each comprising the barrier layer and dental bleaching composition of claim 39.

55. A method for desensitizing a person's teeth comprising obtaining a dental bleaching device comprising the barrier layer and dental bleaching composition of claim 39 and then placing said dental bleaching device over at least a portion of the person's teeth for a desired time period.

WORKMAN NYDEGGER
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

56. A dental bleaching device in the shape of a dental tray suitable for placement over a person's teeth in order to carry out dental bleaching, comprising:

a thin, flexible barrier layer comprising a moisture-resistant material;

an adhesive layer adjacent said barrier layer and comprising a substantially solid adhesive composition in the shape of a dental tray comprising a front side wall, a rear side wall, and a trough between said front and rear side walls,

said adhesive layer having a rigidity so that said adhesive layer contributes more to maintaining said dental bleaching device in the shape of a dental tray prior to use than said barrier layer,

said adhesive comprising at least one tooth adhesion agent that provides or contributes to increased adhesiveness when said adhesive composition is moistened by saliva or water; and

a dental bleaching gel adjacent to an inner surface of said adhesive layer and comprising a dental bleaching agent, a tackifying agent, and a liquid or gel carrier.

57. A dental bleaching device as defined in claim 56, at least a portion of said trough having a cross section that is approximately U-shaped, V-shaped, L-shaped, rectangular, or trapezoidal.

58. A method of manufacturing a shaped dental bleaching composition, comprising:

mixing together a tooth adhesion agent and a solvent to form an adhesive composition intermediate;

removing at least a portion of said solvent from said adhesive composition intermediate so as to form an adhesive layer comprising a substantially solid adhesive composition having increased adhesiveness to teeth when moistened with saliva or water; and

placing a dental bleaching gel adjacent to the adhesive layer,

said adhesive layer having a tray-like configuration comprising a front side wall, a rear side wall, and a trough between said front and rear side walls,

said dental bleaching gel being positioned adjacent to an inner surface of the adhesive layer.

59. A method as defined in claim 58, further comprising placing or forming a barrier layer adjacent to said adhesive layer.

60. A method as defined in claim 59, wherein said barrier layer comprises a dental tray.